CRC do not satisfy criteria for syndromes such as HNPCC, and fall into a "moderate risk" category. The reported polyp burden in this group is varied, and the optimum screening regimen is controversial. Our aims were (1) to evaluate the polyp yield at screening colonoscopy in a "moderate risk" group (above average, non-HNPCC) in the setting of a family-screening clinic, (2) to compare polyp yield on 2nd screening colonoscopy between patients with and without adenomas on 1st screening colonoscopy, (3) to evaluate the potential for longer screening intervals for patients with no adenomas on 1st screening colonoscopy.

Methods Family cancer history questionnaires were used to generate family pedigrees and identify "moderate risk" individuals using defined criteria. Adenoma yield on initial colonoscopy was evaluated, and comparisons were made between males & females, and subjects older & younger than 50 yrs. Advanced adenomas (AA) were defined as adenomas ≥10 mm, with high-grade dysplasia, or with a villous component. In patients who had >1 colonoscopy, adenoma yield on 2nd colonoscopy was compared between patients with and without adenomas on initial colonoscopy.

Results From a cohort of 2008 individuals in a high-risk family-screening clinic, 971 (48%) have been assigned a "moderate risk" category. Complete data were available for screening colonoscopies in 236 of these; 99 male, 137 female. On initial screening colonoscopy, 17/236 (7%) had AA, and a further 37/236 (16%) had simple adenomas (SA), (total polyp yield 23%). Polyp yield was higher in males (8% AA, 18% SA) vs females (7% AA, 14% SA), and in the >50 yrs (13% AA, 20% SA) vs <50 yrs (3% AA, 13% SA). More than 1 screening colonoscopy was carried out in 127/236 (54%). Of the 30/127 (24%) who had an adenoma on initial colonoscopy, 4/30 (13%) had AA, and a further 7/30 (23%) had SA on 2nd colonoscopy (mean interval to f/u 3.62 yrs). In the cohort without adenomas at initial screening; 97/127 (76%), only 1/97 (1%) had an AA, and 10/97 (10%) had SA on 2nd colonoscopy (mean interval 4.6 yrs).

Conclusion In this moderate risk group the polyp yield is highest in males, and those >50 yrs. Adenoma at initial colonoscopy was predictive of adenoma detection at 2nd colonosocopy. In contrast, for individuals without adenomas at initial screening, a very low adenoma yield was observed at follow-up screening. Consequently, within this "moderate risk" cohort, the data supports the adoption of differing screening protocols depending on age, gender, and adenoma yield on initial colonoscopy.

Competing interests None declared.

PTU-227 IMPROVING EFFICIENCY IN CAPSULE ENDOSCOPY: CAN READING TIMES BE REDUCED WITHOUT SACRIFICING DIAGNOSTIC ACCURACY? A SELF-ASSESSMENT

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Introduction Capsule endoscopy (CE) is a time consuming procedure. The RAPID 7 Access reading software (Given Imaging Ltd) has three patterns of view modes (VM) (one view, VM1; double views, VM2; quadruple views, VM4) and an adjustable frame rate (AFR) from 5 to 40 fps. The appropriate settings for VM and AFR depend on capsule endoscopist's experience, and a consensus has not been achieved yet. The aim of this study was to investigate how different VM's and AFR's could influence diagnostic accuracy.

Methods An entire capsule endoscopy procedure consisting of 27 small bowel angioectasias was selected from our database. This was read by a single expert capsule endoscopist repeatedly using 11 different randomised combinations of VM and AFR (1, 2 and 4 VM × 10, 15, 25 and 40 fps). Reading times and number of angioectasias detected for each combination were recorded and then compared.

Results The small bowel transit time was 321 min. Mean reading times (all VM's) at 10, 15, 25 and 40 fps respectively were 34, 22, 14 and 10 min. Considering 10 fps as the gold standard for reading, the reduction in reading time at 15, 25 and 40 fps was 33%, 60% and 70% respectively. No significant differences were noticed in reading times between VM's at the same AFR. A mean of 23, 16, 7 and 6 angioectasias were detected at 10, 15, 25 and 40 fps respectively (all VM's combined). Diagnostic accuracy at 25 and 40 fps was significantly lower than 10 fps (p=0.04, 0.01). The mean numbers of detected angioectasias according to VM were 14, 17 and 16 for VM1, VM2 and VM4 respectively. The lowest number of angioectasias (5) was detected using VM2 × 40 fps. The highest number of angioectasias (25) was detected using VM2 × 10 fps and VM4 × 10 fps. Using VM2 × 15 fps, 18 angioectasias were detected, meaning that diagnostic accuracy was reduced to 72% (compared with VM2 × 10 fps), although the reading time decreased by 33%.

Conclusion Our findings suggest that the highest diagnostic accuracy was achieved with VM2 × 10 fps or VM4 × 10 fps. The AFR influences both diagnostic accuracy and reading time. As the AFR increases, reading times are reduced but this is associated with a reduction in diagnostic accuracy and a concomitant increase in miss rates. Capsule endoscopists need to be aware of this phenomenon.

Competing interests None declared.

PTU-228 PREDICTING DIFFICULT COLONOSCOPY USING THE ST MARK'S DIFFICULT COLONOSCOPY SCORING SYSTEM: A PILOT STUDY

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Introduction Colonoscopy can sometimes be difficult. This may be due to a number of factors such as age, gender, increased colon length, waist/hip ratio <1, BMI<22, abdominopelvic surgery and a history of constipation. Colonoscopists tend to develop their own strategies based on their personal experience and the availability of specialised equipment. A scoring system based on these factors could be a useful predictor of difficult colonoscopy with the advantage that such a score could be calculated prior to the procedure. We therefore developed an evidence based difficult colonoscopy score (DCS), incorporating factors associated with difficult colonoscopy. The aim of this study was to validate the reliability of the proposed St Mark's DCS evaluating the relationship between each factor and caecal incubation time.

Methods Patients referred for routine colonoscopy were recruited. 30 patients were prospectively selected. Each patient was screened using a questionnaire. Colonoscopies were started with an adult colonoscope, but if needed, alternative options such as a paediatric colonoscope or real time magnetic imager were made available on request.

Results The overall caecal incubation rate was 97% (29/30). One patient was excluded due to a colonic stricture. The median DCS was 3 (range 0–6). Median insertion time was 8 min (range 3–23). In three patients colonoscopists changed to an alternative option during colonoscopy. There was a significant correlation between the DCS and insertion time (r=0.511, p=0.005, Pearson's correlation coefficient). Moreover, if the DCS was five or more, caecal intubation time was >15 min suggesting a strong correlation. The significant factors by univariate analysis influencing a caecal intubation time of more than 15 min were "Waist/hip ratio <1 and/or BMI<22", "over 60 years old" and "Constipation". Multivariate analysis suggested the most significant factor for difficult colonoscopy was a history of constipation.

Conclusion This pilot study has shown the DCS could be a useful tool for the prediction of difficult colonoscopy. This could be of benefit when scheduling lists for training and choosing the level of experience of colonoscopists before procedures are performed. A large study is planned.

Competing interests None declared.

PTU-229 THE EFFECT OF FRAME RATE AND VIEW MODE ON LESION DETECTABILITY BY NOVICE AND EXPERT CAPSULE ENDOSCOPISTS DURING READING

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Introduction The RAPID 7 Access reading software (Given Imaging Ltd) allows the capsule endoscopist to adjust the frame rate of presented images (adjustable frame rate, AFR) and their view mode (VM1 - single view; VM2 - dual view; VM4 - quad view) during capsule endoscopy (CE) reading. The aim of this study was to establish the relationship between AFR, VM, lesion miss rate and reading time between non-expert (NEXs) and expert (EXs) capsule endoscopists.

Methods One short video clip containing 60 positive images of angioectasias was selected from our CE database. The clip was read by 3 EXs and 3 NEXs using nine different combinations of VM and AFR (1, 2 and 4 VMs × 10, 15 and 25 fps) presented in randomised order. Readers were asked to count each positive image of an angioectasia using a manual counter, without interrupting the video clip.

Results The reading times at 10, 15 and 25 fps were 54, 34 and 20 s, respectively for any VM. Considering 10 fps as the gold standard, an AFR of 15 and 25 fps resulted in a reduction in reading time of 37% and 63% respectively. The number of positive images detected using 10, 15 and 25 fps (all VM's combined) were 45, 31 and 22 respectively. The mean number of detected positive images (MPI) using 10 fps was significantly higher than an AFR of 15 and 25 fps ($p=0.04$, 0.01). For VM1, VM2 and VM4, the MPI was 24, 36 and 38 respectively. The MPI using VM2 and VM4 was significantly higher than for VM1 ($p=0.01$, 0.003). VM4 × 10 fps had highest MPI (51) while VM1 × 25 fps had the lowest MPI (14). MPIs of NEX and EX (all VM's combined) were 34 and 32 and were not significantly different.

Conclusion While a higher AFR results in a reduction in reading time, lesion detectability is reduced and miss rates increase. Higher MPIs are associated with lower AFRs and an increase in VM. In this study the optimal combination for lesion detectability was VM4 × 10 fps. NEXs and EXs performed similarly for the detection of angioectasias.

Competing interests None declared.

PTU-230 OUTCOMES OF ENDOSCOPIC HUMAN THROMBIN INJECTION IN THE MANAGEMENT OF GASTRIC VARICES

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Introduction The optimal therapy for gastric variceal bleeding remains unclear. Endoscopic Human Thrombin injection appears a technically simple and efficacious alternative to cyanoacrylate with fewer complications, but data remains limited. This study evaluated patient outcomes following thrombin injection for gastric varices.

Methods Retrospective review of patients receiving endoscopic human thrombin injection for active bleeding or prevention of bleeding from gastric varices at a UK tertiary centre from December 2008 to November 2011. Thrombin injection (Tisseel 250 IU/ml, Baxter Int. Inc.) was repeated at intervals until varices eradicated.

Results 23 patients (65% male, mean age 53.1 (SD 14.0)), received human thrombin injection for gastric varices. Mechanism of portal hypertension was cirrhosis 17 patients (74%), extra-hepatic 6 (26%). Cirrhosis was due to alcohol (10), viral (2), PBC (2), other (3); 4 had additional portal vein thrombosis. TIPSS was felt not feasible in 8 (35%). Mean MELD was 13 (SD 5). Childs grade A, B, C in 39%, 35% and 26% respectively. Varices were classified: IGV1 19 (83%), IGV2 3 (13%), GOV2 1 (4%). 14 patients (61%) were actively bleeding or had signs of recent bleeding; of these haemostasis was achieved in 12 (86%). Mean thrombin dose/injection was 1168 IU (range 400–2500); median number of sessions 2 (range 1–7) with no reported complications. Median follow-up was 476 days (IQR 193–931). No patient underwent liver transplantation. Rebleeding occurred in 9 (39%) patients, 5 (56%) within the first week (range 1–1008 days), 1 yr rebleeding rate 35%. Rebleeding was successfully managed in 78%, by salvage TIPSS (5 patients) and thrombin injection (2). Two patients died following rebleeding. Six deaths (26%) occurred in total all within 12 months; the remainder were due to uncontrolled bleeding (1), liver failure (1), MOF following OV bleed banded (1), and hepatocellular carcinoma (1). Cumulative survival at 1, 6, 12 months was 82%, 78%, and 74% respectively. Where TIPSS was precluded, 75% (6 of 8 patients) were managed successfully with thrombin.

Conclusion Thrombin in our series appears to be a safe and effective endoscopic therapy for gastric varices, achieving good haemostasis with low medium to long term rebleeding rates. It may have particular utility in salvaging patients not suitable for TIPSS.

Competing interests None declared.

PTU-231 BOWEL PREPARATION FOR INPATIENT COLONOSCOPY: AN AUDIT OF QUALITY AND OUTCOMES

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Introduction It is well recognised that inpatient colonoscopy is more problematic than outpatient colonoscopy, with poorer quality of bowel preparation[1] and reduced rates of successful completion of the procedure among inpatients.[2] We aimed to measure the quality of bowel preparation and the success rate of inpatient colonoscopy in a large district general hospital.

Methods All patients undergoing inpatient colonoscopy at Worcestershire Royal Hospital between 1 September 2010 and 1 September 2011 were identified retrospectively using paper-based documentation available in the Endoscopy department. The computerised colonoscopy reports (Unisoft, Enfield, UK) were then obtained for these patients. Standard bowel preparation for these patients was two sachets of Picolax, one the evening before and one the following morning, with colonoscopy performed on an afternoon list. Successful colonoscopy was defined as intubation of the caecum with "excellent" or "good" bowel preparation.

Results We identified 50 patients undergoing inpatient colonoscopy, with a median age of 74 (IQR 62–80), representing 3% of all colonoscopies done during this period. Approximately one-third (38%) were performed due to suspicious symptoms (most commonly PR bleeding), one-third (34%) were performed due to a CT abnormality,